

1 Given that  $f(x) = x - 4$  find:

(a)  $f(5)$  (1)

(b)  $f(3)$  (1)

**(Total for Question 1 is 2 marks)**

2 Given that  $g(x) = 2x^2 - 10$  find:

(a)  $g(2)$  (1)

(b)  $g(-2)$  (1)

(c) Solve:  $g(x) = 8$  (3)

**(Total for Question 2 is 5 marks)**

3 Given that  $f(x) = 3x - 5$  find:

(a)  $f(3)$  (1)

(b)  $f(-2)$  (1)

(c) Solve  $f(x) = 1$  (2)

**(Total for Question 3 is 4 marks)**

4 Given that  $f(x) = x^2 - 3$  find:

(a)  $f(10)$  (1)

(b)  $f(-1)$  (1)

(c) Solve:  $f^{-1}(x) = 8$  (2)

**(Total for Question 4 is 4 marks)**

5 Given that  $f(x) = 2x - 4$  and  $g(x) = 3x + 5$

(a) Find  $gf(3)$  (2)

(b) Work out an expression for  $f^{-1}(x)$  (2)

(c) Solve  $f(x) = g(x)$  (2)

**(Total for Question 5 is 6 marks)**

6 Given that  $f(x) = 3x + 1$  and  $g(x) = x^2$

(a) Find  $fg(x)$  (2)

(b) Work out an expression for  $gf(x)$  (2)

(c) Solve  $fg(x) = gf(x)$  (3)

**(Total for Question 6 is 7 marks)**

7 Given that  $f(x) = x^2 - 17$  and  $g(x) = x + 3$

(a) Work out an expression for  $g^{-1}(x)$  (2)

(b) Work out an expression for  $f^{-1}(x)$  (2)

(c) Solve  $f^{-1}(x) = g^{-1}(x)$  (4)

**(Total for Question 7 is 8 marks)**

8 The function  $f$  is defined such that  $f(x) = x^2 - 1$

(a) Find an expression for  $f(x - 2)$  (2)

(b) Hence solve:  $f(x - 2) = 0$  (2)

**(Total for Question 8 is 4 marks)**

9 The function  $f$  is defined such that  $f(x) = 4x - 1$

(a) Find  $f^{-1}(x)$  (2)

The function  $g$  is defined such that  $g(x) = kx^2$  where  $k$  is a constant

(b) Given that  $fg(2) = 12$  (2)

Work out the value of  $k$ .

**(Total for Question 9 is 4 marks)**